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ORDER OF SOLUTIONS IN AMBIGUOUS ANAGRAMS AS A FUNCTION OF WORD FREQUENCY OF THE SOLUTION WORDS.

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THE AUTHORS HYPOTHESIZED THAT IF SUBJECTS WERE PRESENTED WITH "AMBIGUOUS" ANAGRAMS (THOSE WITH MULTIPLE SOLUTIONS), THE SOLUTION-WORD WITH THE HIGHEST NORMAL FREQUENCY OF OCCURRENCE WOULD BE DETERMINED FIRST, THE NEXT MOST FREQUENT SOLUTION-WORD WOULD BE DETERMINED SECOND, AND SO ON. SIXTY-NINE COLLEGE STUDENTS ATTEMPTED TO SOLVE 15 ANAGRAMS, EACH CONTAINING THREE OR MORE POSSIBLE SOLUTION-WORDS. THE RESULTS SHOWED THAT ORDER OF SOLUTION WITHIN ANAGRAMS WAS A DECREASING FUNCTION OF THE WORD FREQUENCY OF THE POSSIBLE SOLUTION-WORDS, IN ACCORDANCE WITH THE HYPOTHESIS. THIS ARTICLE IS A REPRINT FROM "PSYCHONOMIC SCIENCE," VOLUME 3, 1965. (JH)

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ORDER OF SOLUTIONS IN AMBIGUOUS ANAGRAMS AS A FUNCTION OF WORD FREQUENCY OF THE SOLUTION WORDS

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Order of solutions in ambiguous anagrams as a function of word frequency of the solution words[1]

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Abstract

Sixty-nine Ss attempted to solve 15 "ambiguous" anagrams each containing three or more possible solution words. The results showed that order of solution within anagrams was a function of the word frequency of the solution words.

Problem

Mayzner & Tresselt (1958) have previously demonstrated that in certain types of anagram tasks high frequency solution words tend to take significantly less time to solve than do low frequency solution words. To explain this finding they suggest that "...if the solution to an anagram is a word having a high frequency of occurrence in the language, it will probably be relatively high in S's response repertoire, and therefore possess a greater potential for evocation...than a word having a low frequency of occurrence." (p. 378). On the basis of this argument one would predict that if S were presented with "ambiguous" anagrams, i.e. anagrams with multiple solutions, the solution with the highest frequency of occurrence would tend to occur first, the next most frequent solution word second, and so on. The present study is designed to test this hypothesis.

Method

The Ss were 69 male and female students enrolled in an educational psychology class at the University of Wisconsin.

Fifteen anagrams were constructed in such a manner that all had three or more solutions and all individual anagram solutions were words of differing frequency of occurrence according to the Thorndike-Lorge (1944) count. The anagrams were: time, stare, stop, meal, late, slap, eat, read, hose, trace, pat, large, came, team, deal. In order to control for the possible effects of letter order on the probability of a given solution (several studies have shown that the order of letters in an anagram tends to affect its solution, e.g. Mayzner & Tresselt, 1958; Mayzner & Tresselt, 1959; Rees & Israel, 1935; etc.), three different experimental lists were constructed using the same 15 sets of letters but in three different random orders. After each anagram there were three blanks for the S's response.

Ss were assigned at random to one of the lists and were instructed to solve the anagram by writing down their first response in the first blank, then the second and third in the appropriate blanks. Although ample time was allowed for the Ss to attempt all 15 anagrams, some Ss were not able to think of three responses to each anagram. This was relatively equal across the three experimental lists.

Table 1.

Word Frequency Score	Thorndike-Lorge Frequency 1 Million
7	100 or higher
6	51 - 99
5	41 - 50
4	31 - 40
3	21 - 30
2	11 - 20
1	1 - 10
0	0 - or lower

Each solution word supplied by the S was assigned a "word frequency" score based on the Thorndike-Lorge (1944) counts using Table 1.

Results and Discussion

The mean word frequency scores of the first response are highest (5.17), followed by the second response (4.47), and then the third (3.67). An analysis of variance reveals these differences to be highly significant ($F = 149.67$, $df = 2/204$, $p < .001$). Thus order of solutions to "ambiguous" anagrams is shown to be a decreasing function of the word frequency of the possible solution, in accordance with the hypothesis.

These results are consistent with the findings of Mayzner & Tresselt (1958) and Ronning (1965) which show faster solution times for anagrams involving high frequency words. Unfortunately, our anagrams did not permit any adequate check on Ronning's "rule-out" factor.

In addition, the hierarchical response modes observed in this task would seem to be analagous to the hierarchical ordinal position effects found with free associations (e.g. Bousfield & Barclay, 1950; Skinner, 1936; Mandler & Parnes, 1957) and with synonym associations (Johnson, Meinke, Van Mondfrans, & Finn, 1965).

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Note

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